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Abstract

Neuronavigation has become an ubiquitous tool in the surgical management of brain tumors. This review describes the use and limitations of current neuronavigational systems for brain tumor biopsy and resection. Methods for integrating intraoperative imaging into neuronavigational datasets developed to address the diminishing accuracy of positional information that occurs over the course of brain tumor resection are discussed. In addition, the process of integration of functional MRI and tractography into navigational models is reviewed. Finally, emerging concepts and future challenges relating to the development and implementation of experimental imaging technologies in the navigational environment are explored.